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ABSTRACT

One characteristic of human learning, which most psychologists and educators appear to deem highly desirable, is that of attending long enough to a stimulus so that learning occurs. It is this principle that gave a major purpose to the study to investigate the relationship between a simple and a complex attention span task and the reading performances of Mexican-American children at the third grade level. Secondary objectives of the study were to explore the relationship between behaviors observed during the attention span tasks and to ascertain if a relationship existed between teachers' judgment of attention span and reading performances. Two conditions, a simple attention span task and a complex attention span task, were administered to one hundred randomly selected subjects. Both tasks involved correct and false detections of a signal word or signal word series among a list of nine signals appearing at regular intervals for ten minutes. Significant differences as measured by the complex attention span task and teachers' judgment of attention span have been obtained between these two variables and reading performances of the Mexican-American children at the third grade level. (Author)

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The Relationship of Attention Span To Reading Performance in Mexican-American Children

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Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, California, April, 1976. The research reported in this study is based upon a doctoral dissertation submitted to the faculty of the College of Education, University of Arizona (1975). The author is a Reading Resource Teacher and a member of Reading Coordinator's Cadre for Tucson Public Schools.

CS 002 685

The Relationship of Attention Span To Reading Performance in Mexican-American Children

Introduction

If any period in the history of United States education could be described as a time of a plethora of materials and technological advances, it would be in today's era.

With the variety of materials and technological "know'how" available, the challenge of understanding the educational needs of children focuses more and more on the ability of a child to attend to an assignment or specific task. In 1958, English and English defined the length of time a person can attend to one thing as attention span. As a result, the psychological principle of attention has become of great importance to psychologists and educators in their preparation of materials and programs for today's children.

Not only has a renewed interest of attention to the learning process emerged over the past two decades, but approaches for educating children from minority groups have taken on greater significance. Various ways to meet the needs of these children, especially the ones who speak a language other than English, have been explored and investigated.

To education falls the responsibility of accepting the role of leadership in providing educational opportunities for minority children. If education is to carry its leadership role successfully, then it is essential that a more thorough understanding of the Mexican-American child be of a highest priority.

Statement of the Problem

The purpose of this study was to investigate the relationship between a simple and a complex attention span task and the reading performances of selected Mexican-American children.

Objectives of the Study

Specifically, the research objectives were: (1) What was the relationship between performance on a simple attention span task and the reading performance of Mexican-American children? (2) What was the relationship between performance on a complex attention span task and the reading performance of Mexican-American children? (3) What was the relationship between performance on simple and complex attention span tasks and the reading performance of Mexican-American children? (4) What was the difference between male and female performances on a simple attention span task of Mexican-American children?

(5) What was the difference between male and female performances on a complex attention span task of Mexican-American children? (6) What was the relationship between behavior observed during the attention span tasks and the reading performance of Mexican-American children? (7) What was the relationship between teachers' judgment of attention span and the reading performance of Mexican-American children?

Delimitations of the Study

The delimitations of the study were as follows: (1) The sample of subjects was from among the third graders who successfully obtained the criterion standard on the screening test. (2) The sample consisted of one hundred children (fifty boys and fifty girls) from the Mexican-American third grade population of three schools in Nogales, Arizona. (3) The subjects in the sample were from families who represented a cross-section of the socio-economic structure in Nogales, Arizona.

Limitations of the Study

The following operated as limitations of the study: (1) The investigator was a middle-class Anglo. (2) Attempts were made to alleviate the language interference between Spanish and English by using initial position consonant words that were most nearly the same in both languages. (3) The reading scores were from a standardized test that was administered to the subjects by their teachers. The reading test was not culture fair, and was in a second language for the subject.

Definitions of Terms

For this study, the following operational definitions were applicable:

1. Attention Span: A time period of ten minutes which the subject attended to a task detecting a specific signal. The number of correct and false detected signals inferred the level of attentiveness the subject attended to this task.

2. Attention Span Tasks:

   A. Simple--The detection of a signal word among a list of nine words that appeared individually at regular intervals for a period of ten minutes. Each word was simultaneously presented to the visual and auditory channels.

   B. Complex--the detection of a signal word series among a list of nine word series that appeared at regular intervals for a period of ten minutes. Each series, consisting of three words, was simultaneously presented to the visual and auditory channels.

   C. Mexican-American: Individuals who met the following criteria:

      A. Linguistic --a child who communicates in Spanish or any of its dialectal variations and also communicates in English.

      B. Cultural--a child who is exposed and participates in the aspects of Mexican heritage, such as festivities and family customs.

Method

Subjects

The subjects who participated in this study were one hundred (fifty boys and fifty girls) randomly selected third grade children enrolled in three public schools in Nogales, Arizona. Nogales is located on the Mexico-United States border. Spanish is the predominant language in the business and community life of the area. Approximately 80% of the students are from Spanish-speaking homes; for these students English is a second language.

The mean chronological age of the subjects for this project was 8.5 years, the boys with a mean of 8.6 years, and the girls with a mean of 8.5 years.

Sampling Procedure

The researcher spent several weeks in the third grade classrooms establishing rapport with the potential subjects prior to the administration of the screening test. A total of six hours was spent in each of the ten classrooms. Reading stories, working in interest centers, participating in recess play, and talking with pupils while they were engaged in small group gatherings were activities utilized to establish a relationship with the children.

When the initial contact with all the third grade children had been completed, a screening test was administered to all 277 third graders. The purpose of the screening test was to provide a list of potential subjects. The nine words selected for the simple and complex attention span tasks constituted the screening test. The researcher presented the nine words individually on hand flash cards. A time exposure of three seconds was the maximum time for the pupils to respond by saying the word. In order to be eligible for possible selection, each subject was required to recognize the nine words within the time limitation.

In addition to determining if a subject had the nine words within his sight vocabulary, each pupil was asked if he participated in festivities, such as All Saints' Day, Cinco de Mayo, Las Posadas, and fiestas, identified with the Mexican culture. Likewise, the child was asked if he spoke both Spanish and English.

General Procedures

Each subject, escorted by the researcher, was taken from his classroom to a small room set aside for testing. The room provided an area from interruptions and noises; therefore, the subjects had no external stimuli that caused distractions from attending to the particular task.

Two testing conditions, a simple attention span task and a complex attention span task, were administered to all selected subjects. A complete counterbalance of the two tasks was followed.

In each of the two attention span conditinns, the subject responded to stimuli that were presented simultaneously to his visual and auditory channels. The stimuli were presented through the media of a slide projector and a tape recorder which were synchronized.

As the subject responded to the stimuli, time notation (in minutes and seconds) was recorded when the subjects exhibited, any or all, of three distinct physical behaviors. The three physical behaviors noted were (1) shifting of the body from side to side within the chair, and also having head movements by looking all around the room, (2) looking to the right and to the left of the machine, and/or looking around the room without any other bodily movements, and (3) making a 180 degree turn to look at the investigator who was located approximately four feet directly behind the subject.

Simple Task Procedures

The researcher modeled the procedure. The purpose of modeling was to avoid any practice effects the subject might gain in doing the trial run. The words in the modeling performance did not appear in the attention span task (See Appendix). After the modeling procedure, a two minute break was given the subject.

When the machine was set and in order, the subject was taken to a chair that had been placed in front of the screen. The subject adjusted his seat to a distance from the screen for his best viewing (approximately eighteen to twenty-four inches).

The investigator said: "Man is the important word you are to look and listen for in the next few minutes. Keep your finger on this button all the time. Everytime you see and hear this word, press the button. The important word is man."

Each subject responded to the signal word or non-signal word by depressing a button that was located on the table in front of him. When the subject pressed the button, a light was flashed to the investigator, indicating a response had been made. The light was visible only to the researcher, who was located approximately four feet directly behind the subject.

Simple Task Words

During the simple attention span task, the subject responded to a signal word among a list of nine words that appeared individually at regular intervals for a period of ten minutes.

The words for the attention span task were carefully selected in order to reduce sound interference as much as possible between the two languages, Spanish and English. The words were verified by several Mexican-American educators who have linguistic expertise.

The selected words were: family, man, table, door, face, toy, food, dog, and milk. (See Appendix)

Man was the designated signal word for the simple attention span task. The signal word, man, appeared sixteen times during the ten minute presentation. The scoring procedure was the number of correct and false detections of man made by the subjects. False detections were responses made by the subject to non-signal words. The score sheet was marked each time the signal or non-signal word was detected.

The rationale for using words, visually and auditorily, as stimuli rather than sensory stimuli was that words represented more closely what reading is all about. The reading process involves the visual as well as the auditory modalities. For this study, the researcher adopted and modified the procedures and stimuli used by Das (1970) in his selection of words for his study to measure sustained attention.

English words were chosen because the third grade pupils' reading achievement standings were reflected by the scores they obtained on a standardized reading test that was administered in English.

The presentation order of stimuli was randomly assigned with the rate of presentation for the signal and non-signal words being one word every nine seconds. Each stimulus had an exposure duration of three seconds. A total of forty-five stimuli appeared during the ten minute task.

Research relative to time exposure duration and intervals revealed that the use of less than a three second exposure duration did not give third grade students enough time to identify flashed words. In a study conducted by Gibson and Guinet (1971), it was found that an exposure time less than one second was too fast for third graders to identify a word. Bonsall and Dornbush (1969), in a study of second, fourth, and sixth graders, utilized exposure times for single words at .5 second, one second, and three seconds. It was established that a great number of errors occurred at the .5 second exposure time. It was further found that at the three second exposure time second grade children were able to identify and to respond comparably to the more mature fourth and sixth grade pupils. The primary purpose of this task was not only to recognize instanteously the words, but to also maintain an alertness to detect a designated signal over a period of time. So a three second exposure duration was used.

Since this project's task was to elicit a response over a period of time, consideration was given to the time necessary between stimuli in order to give the subject sufficient time to respond by pressing a button. When a five second interval was used between stimuli, it was found that third graders had enough time to respond and become ready for the next stimulus (Gibson and Guinet 1971). It appeared reasonable to have a nine second interval between stimulus in this study to give the subjects time to process the information, respond by pressing the button, and be prepared to react to the next stimulus.

Procedures for the Complex Task

The same basic procedures were followed in the complex attention span task as in the simple attention span task.

The set of directions given to the subject prior to testing was: The researcher said: "The important row of words is face door milk. Face is first; door is in the middle; milk is last. You are to look and listen for this row of words in the next few minutes. Everytime you see and hear this row of words, press the button. Be sure you keep your finger on the button at all times. The important row of words is face door milk.

Complex Task Words

The complex attention span task required the subject to detect a signal word series among a list of nine word series that appeared at regular intervals for a period of ten minutes. The complex task words consisted of the same nine words used in the simple task; however, the words were formed in a series of three words. (See Appendix)

The signal for the complex attention span task was face door milk. The same scoring procedure applied as in the simple attention span task.

Reading Performance Test

The scores for the reading performance of the subjects were taken from the Stanford Achievement Test, Primary Level II, Form A (Harcourt Brace Jovanovich, Inc. 1973). This standardized test was administered to all third grade children by their third grade teachers. The scores taken from this test were the total reading raw scores. It was assumed the classroom teachers followed the directions in the testing manual for administering the reading test.

Pupil Rating Scale

A pupil rating scale was developed for the purpose of the teacher rating each of the participating subjects in this study. The teacher was asked to rate each subject in terms of his attention span in a reading task activity. This rating was a way of looking at the relationship of a subject's performance in a one-to-one basis and his performance in a classroom activity under the teacher's supervision. The rating scale consisted of three alternatives that the teacher needed to consider. The three choices were five minutes, ten minutes, and fifteen minutes. (See Appendix)

The teacher checked the time choice that best described the subject's typical attentive performance in a reading activity. The rating of the pupils was not completed by the teacher until all the subjects had been given both attention span tasks. No data on how well a pupil had performed on the two attention span tasks were shared with the teachers.

Pilot Study

The purpose of the pilot study was to validate the instructions and general procedures in using the machine.

The pupils participating in the pilot study were not further involved in the research.

Results

A two-way analysis of variance for repeated measures (Tables 1 and 2) was calculated for correct and false detection variables. As shown in the tables there was a significant ($P < .01$) difference for task complexity on both the false and correct detections. No significant difference existed between male and female performances nor was an interaction present across the two factors, sex and task complexity.

Table 1: Results of Two-Way Analysis of Variance for Repeated Measures--Correct Detections

Source of Variation	DF	SS	MS	F
Sex (A)**	1	0.72	0.72	0.12
Error (A)	98	599.36	6.12	
Task (B)***	1	38.72	38.72	7.67*
Interaction (Sex x Task)	1	6.48	6.48	1.28
Error (AB)****	98	494.80	5.05	
Total	199			

*$p < .01$.
**A = variance due to sex factor.
***B = variance due to task complexity.
****AB: variance due to differential results from combination of sex factor and task complexity.

Table 2: Results of Two-Way Analysis of Variance for Repeated Measures--False Detections

Source of Variation	DF	SS	MS	F
Sex (A)**	1	8.00	8.00	3.25
Error (A)	98	241.28	2.46	
Task (B)***	1	15.68	15.68	8.25*
Interaction (Sex x Task)	1	6.48	6.48	3.41
Error (AB)****	98	185.84	1.90	
Total	199			

*$p < .01$.
**A = variance due to sex factor.
***B = variance due to task complexity.
****AB = variance due to differential results from combination of sex factor and task complexity.

Table 3 shows the means and standard deviations of simple and complex attention span task scores. A significant mean difference ($p < .01$) for correct and false detections was found between the simple and complex attention span task.

Table 3: Means and Standard Deviations of Simple and Complex Attention Span Scores ($N = 100$)

	Simple Task		Complex Task		
Variable	Mean	Standard Deviation	Mean	Standard Deviation	t-value
Correct Detections	14.30	1.81	13.42	2.80	2.75*
False Detections	.66	1.05	1.22	1.83	3.29*

*$p < .01$.

Male and female performances on simple task variables, as indicated in Table 4, revealed no statistically significant difference for the correct or false detections. (See Appendix for charts regarding male and female performances)

Table 4: Male and Female Performances on Simple Attention Span Task Variables

	Males ($N = 50$)		Females ($N = 50$)		
	Mean	Standard Deviation	Mean	Standard Deviation	t-value
Correct Detections	14.42	1.84	14.18	1.78	0.67
False Detections	.68	1.06	.64	1.05	0.20

As indicated in Table 5, a significant mean difference ($p < .05$) was found for the false detections between the males and females in the complex attention span task. (See Appendix for charts regarding male and female performances)

Table 5: Male and Female Performances on Complex Attention Span Task Variables

Variable	Males (N = 50) Mean	Males (N = 50) Standard Deviation	Females (N = 50) Mean	Females (N = 50) Standard Deviation	t-value
Correct Detections	13.18	2.73	13.66	2.88	0.84
False Detections	1.60	2.09	.84	1.46	2.11*

*$p < .05$.

Tables 6 and 7 present the means and standard deviations of the overt physical behaviors observed during the simple and complex attention span tasks. The data found for the behaviors are reported in minutes, indicating the time the behavior first became observable in the ten minute attention span tasks.

Table 6: Behaviors Observed During Simple Attention Span Task (N = 100)

Variable	N	Mean (Minutes)	Standard Deviations (Minutes)
Shifting and Looking Around	100	6.55	2.61
Looking Around	100	4.58	3.24
Looking at Investigator	33	1.22	2.39

Table 7: Behaviors Observed During Complex Attention Span Task (N = 100)

Variable	N	Mean (Minutes)	Standard Deviations (Minutes)
Shifting and Looking Around	100	6.52	2.68
Looking Around	100	5.09	3.19
Looking at Investigator	33	.87	1.78

The means and standard deviations of the teacher rating of students' attention span are reported in Table 8.

Table 8: Teacher Rating of Student Attention Span (N = 100)

Subjects	N	Mean (Minutes)	Standard Deviations (Minutes)
Males	50	11.00	3.78
Females	50	12.10	3.79
Total	100	11.55	3.81

The mean and standard deviations of the reading test raw scores are reported in Table 9. The total mean raw score encompasses a reading range of 1.0 to 4.7 grade level. The mean raw score of 98.29 represents a mean grade equivalent score of 2.5.(grade)

Table 9: Means and Standard Deviations of Reading Test Raw Scores (N = 100)

Subjects	N	Mean	Standard Deviations
Males	50	102.70	53.74
Females	50	93.80	32.07
Total	100	98.29	44.25

To assess the relationships of eleven variables, inter-correlations, and correlations with the criterion variable, reading performance, were calculated. (See Table 10) An overall view of the correlation matrix shows low but significant relationships between pupil rating by teacher ($p < .01$), correct detections in the complex attention span task ($p < .05$) and reading performance.

A summary of the multiple regression for each of the eleven variables used as predictor to reading performance is in Table 11. The overall F of 1.65 obtained for the eleven variables was not statistically significant.

Table 10. Product-Moment Correlation Coefficients for the Predictor Variables and the Criterion, Reading Performance

Variable	1	2	3	4	5	6	7	8	9	10	11	12
Simple Task												
1. Correction Detections	( )	-.42**	.33**	.15	-.15	.10	-.06	.25*	.13	-.05	.04	.11
2. False Detections		( )	-.31**	-.22*	.15	-.22*	.15	-.11	-.06	-.03	-.18	-.15
3. Shifting and Looking Around			( )	.71**	-.07	.05	-.01	.39**	.29**	-.17	-.00	-.04
4. Looking Around				( )	-.07	.07	-.03	.29**	.33**	-.24*	.13	.03
5. Looking at Investigator					( )	.00	.02	-.18	-.36**	-.08	.05	-.12
Complex Task												
6. Correction Detections						( )	-.42**	.30**	.24*	.05	.40**	.19*
7. False Detections							( )	-.25*	-.05	.08	-.22*	-.04
8. Shifting and Looking Around								( )	.57**	-.25*	.27**	-.01
9. Looking Ahead									( )	-.13	.30**	.05
10. Looking at Investigator										( )	-.10	.08
11. Pupil Rating by Teacher											( )	.33**
12. Reading Performance												( )

* $p < .05$ when $r = .19$; $df = 98$.
** $p < .01$ when $r = .26$; $df = 98$.

Table 4. Summary of Multiple Regression Variables (N=100)

Variable	Multiple R	R^2	R^2 Change	SS	MS	Overall F
Correct Detections--Simple Task	.108	.012	.012	33212.120	3019.284	1.65
Pupil Rating by Teacher	.339	.115	.104	160616.470	1825.187	
Looking at Investigator--Complex	.357	.128	.012			
Looking at Investigator--Simple	.376	.141	.014			
False Detections--Complex	.377	.142	.001			
Looking Around--Simple	.384	.148	.005			
False Detections--Simple	.388	.150	.003			
Shifting and Looking Around--Complex	.403	.162	.012			
Correct Detections--Complex	.411	.169	.001			
Looking Around--Complex	.414	.171	.002			
Shifting and Looking Around--Simple	.414*	.171**	.000			

*R = .41
**R^2 = .17 (17%)

Discussion

The difficulty of determining which factors have the greatest influence on attention span and the relationship to reading performance is ever present. The challenge for this study was an exploration of the attention span factors and their relationship, if any, to reading performances in Mexican-American children.

In order to discern the factors which are of primary importance to thepresent study in the clearest possible way, the discussion will be presented according to the following sequence: (1) the simple attention span task, (2) the complex attention span task, (3) the simple and com plex attention span tasks, (4) the relationships of two attention span tasks to reading performance, (5) the male and the female performances on the two attention span tasks (6) behaviors manifested by the subjects during the two attention span tasks, (7) the teacher's judgment of the attention span and its relationship to reading performance, and (8) the eleven variables as predictors to reading performance.

Simple Attention Span Task

In an examination of the simple task variables, one observes a high mean for the correct detection of the signal word, man, by the total group. An interpretation of this high mean points to an attentive group for this particular task. Added support for this attentive behavior by the Mexican-American children is noted by the low false detection mean. Das (1970) supported such an interpretation that when the correct detections are high and false detections are low, a high level of attentiveness exists.

It appears that the performances on the simple attention span task by the Mexican-American children, like any other children, show a high level of attentiveness to an academic task for a period of time.

Complex Attention Span Task

For the complex attention span task, one finds a correct detection mean of 13.42, a high mean when considering a maximum score to be sixteen. A low mean is also reported for the false detections. In the correlation matrix a negative correlation of -.42 is reported between the correct detections-complex attention span task and the false detections--complex attention span task. An explanation for this correlation is as the level of correct detections rise, there is an accompanying decrease in the false detections. In other words, the attentive behavior to the complex task demanded the complete consideration of the subjects to the signal series because the series of three words were arranged in various orders. This mixed order of words required greater attention in order that the subjects not make false detections.

From the above findings, the Mexican-American children show a high level of attentiveness. With the length of the complex attention span task being ten minutes, and a high detection of the signal by three-fourths of the subjects, it appears the Mexican-American children have at least an attention span of ten minutes to a task that demanded concentration and attentiveness.

Simple and Complex Attention Span Tasks

Even though a high level of attentiveness existed on both the simple and complex attention span tasks, a higher level of attentiveness is inferred for the simple attention span task than for the complex attention span task. The performances of the Mexican-American children indicated consistently a high level of attentiveness; however, it was the complex attention span task that brought out differences between the two tasks. The complex attention span task required attentiveness to varied cues. So when the attentive behavior is high, there is an increased tendency to focus on only a few cues, which impairs discrimination of the proper word series. This impaired discrimination leads to a reduce ability to focus on the relevant cues. Thus, although the subjects become more selected when attentive behavior was high, the effectiveness of their performance was likely to deteriorate sooner than for a less demanding task. This interpretation was supported by Kahneman 1973).

Attention Span Tasks and Reading Performance

Since two major objectives of this study were to investigate the relationship between a simple and a complex attention span task and the reading performances of Mexican-American children, consideration is directed to the relationship existing between these variables.

It is noted in the correlation matrix that the simple attention span task variables were not significant with the criterion, reading performance.

One observes in the correlation matrix a significant relationship between the correct detections-complex attention span task and reading performances ($p < .05$). There is a relationship between the complex attention span task and the readin g performances of the Mexican-American children at the third grade level. This correlation might be interpreted to mean that as the correct detections rise, there is an accompanying rise in the reading performances of those children. In other words, the demands of the complex attention span task tend to deal more closely with the demands of a reading performance test. The performance on a reading test requires the ability to respond to groups of words in order to comprehend the meanings of the short selections. This attention to the complex attention span task is thought of as the ability to focus on certain stimuli while neglecting others, and certainly the reading act requires attentiveness and accuracy to rather recondite details for a period of time (Noland and Schuldt 1971).

Male and Female Performances on the Attention Span Tasks

In many research studies regarding the attentive behavior of boys and girls, it is reported that girls tend to show a higher level of attentiveness than the boys. For the simple attention span task, no difference was found in the performances of the males and the females. It is worthy to note that the correct detection mean was high for both sexes. The false detections made by the girls and the boys were very comparable, both recording nearly the same number. A level of attentiveness existed for the Mexican-American boys and girls in this study.

There was a statistically significant mean difference found on the false detections made by the boys and girls in the complex attention span task ($p < .05$) More false detections were recorded by the boys than the girls, indicating less attentiveness over a period of time by the males to the demands of the complex attention span task. As a result of the fewer false detections being made by the girls, it is inferred that the girls were more attentive than the boys during the complex attention span task. The findings of this study seem to be in congruence with the findings of Shacter (1933); she found that girls showed a longer sustained attention span to a complex task than the boys. In a more recent study, Turnure and Samuels (1973) reported that the girls were able to show a higher level of attentiveness to an academic task than the boys. From the above findings, it appears that the Mexican-American males' and females' performance on the complex attention span task are similar to the findings being reported by researchers involving other children.

Behaviors Observed

To gain an understanding on how the Mexican-American children in this study attended to the two attention span tasks, three behaviors: (1) shifting and looking around, (2) looking around, (3) looking at the investigator, were recorded. Exhibition of these physical behaviors occurred at the same time when a high level of attentiveness existed on both attention span tasks. When the demands of the task were high, the looking and shifting around may serve as a release of attention or energy in order to continue with the demands of the task.

Teachers' Judgment of Attention Span and Reading Performance

A moderate correlation is reported between teachers' judgment of pupils' attention span and reading performance ($p < .01$). An explanation for this relationship might be that the classroom teachers have been actively involved in writing behavioral objectives, determining ways to assess pupils' performances, and analyzing innovative instructional techniques. Thus, these experiences by the teachers may have enabled them to gain a more profound insight into the attention span of their children in relationship to their reading performances.

Eleven Variables as Predictors to Reading Performance

Finally in Table 11, it is encouraging to note that the eleven variables of the study as a group did relate to the reading performance of the Mexican-American children. Specifically, seventeen percent of the variance for reading performance has been accounted for by those eleven variables, leaving eighty-three percent unaccounted for. It is interesting to note that teachers' judgment accounted for ten percent of the seventeen percent variance, leaving seven percent variance for the other variables. Accounting for nearly twenty percent of a pupils' variance in reading should be considered a positive step when: (1) the stage of development of attention span for this age group is in transition, (2) the nature of the instruments being used is exploratory.

Conclusions

This research project described in detail had the purpose of gaining an insight into the relationship of a simple and a complex attention span task and reading performance of Mexican-American children.

On the basis of the statistically significant relationship of reading performance with the two variables, correct detections-complex attention span task and pupil rating by the teacher, the following major conclusions are:

(1) The performances of the Mexican-American children at the third grade level on a complex attention span task related to their performances on a reading test.

(2) Teachers' judgment of pupils' attention span related higher to their reading performances than their performances on attention span tasks in a laboratory environment.

Conclusions for the statistically significant inter-relationships among the remaining variables are as follows:

(1) On various attention span tasks, Mexican-American children at the third grade level show different levels of attentiveness.

(2) Performances on a complex attention span task by the Mexican-American children at the third grade level reflect sex as a determinant factor in differences in performances.

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Screening Test

family

man

table

door

face

toy

food

dog

milk

Simple Task Words for Modeling

foot

top

dad

fence

fan

moon

Complex Task Series of Words for Modeling

foot	top	dad
top	dad	foot
dad	foot	top
fence	fan	moon
moon	fence	fan
fan	moon	fence

Simple Task Words

Pupil Number _____ Correct detections ___
Date _____ False detections ___

1.	man	____	24.	man	____
2.	face	____	25.	door	____
3.	door	____	26.	family	____
4.	milk	____	27.	toy	____
5.	face	____	28.	dog	____
6.	toy	____	29.	dog	____
7.	face	____	30.	face	____
8.	door	____	31.	man	____
9.	man	____	32.	door	____
10.	man	____	33.	face	____
11.	door	____	34.	man	____
12.	face	____	35.	table	____
13.	toy	____	36.	man	____
14.	man	____	37.	man	____
15.	door	____	38.	man	____
16.	man	____	39.	food	____
17.	milk	____	40.	man	____
18.	face	____	41.	milk	____
19.	man	____	42.	man	____
20.	man	____	43.	food	____
21.	door	____	44.	table	____
22.	family	____	45.	man	____
23.	door	____			

Complex Task Words

Pupil Number _____
Date _____

Correct detections ____
False detections ____

1.	face door milk	____	24.	man family toy	____
2.	door milk face	____	25.	food dog table	____
3.	toy man family	____	26.	man family toy	____
4.	food dog table	____	27.	face door milk	____
5.	door milk face	____	28.	toy man family	____
6.	milk face door	____	29.	toy man family	____
7.	face door milk	____	30.	milk face door	____
8.	man family toy	____	31.	table food dog	____
9.	toy man family	____	32.	table food dog	____
10.	milk face door	____	33.	dog table food	____
11.	family toy man	____	34.	face door milk	____
12.	food dog table	____	35.	man family toy	____
13.	face door milk	____	36.	dog table food	____
14.	face door milk	____	37.	face door milk	____
15.	face door milk	____	38.	family toy man	____
16.	milk face door	____	39.	face door milk	____
17.	door milk face	____	40.	face door milk	____
18.	toy man family	____	41.	door milk face	____
19.	face door milk	____	42.	face door milk	____
20.	face door milk	____	43.	face door milk	____
21.	door milk face	____	44.	food dog table	____
22.	food dog table	____	45.	face door milk	____
23.	face door milk	____			

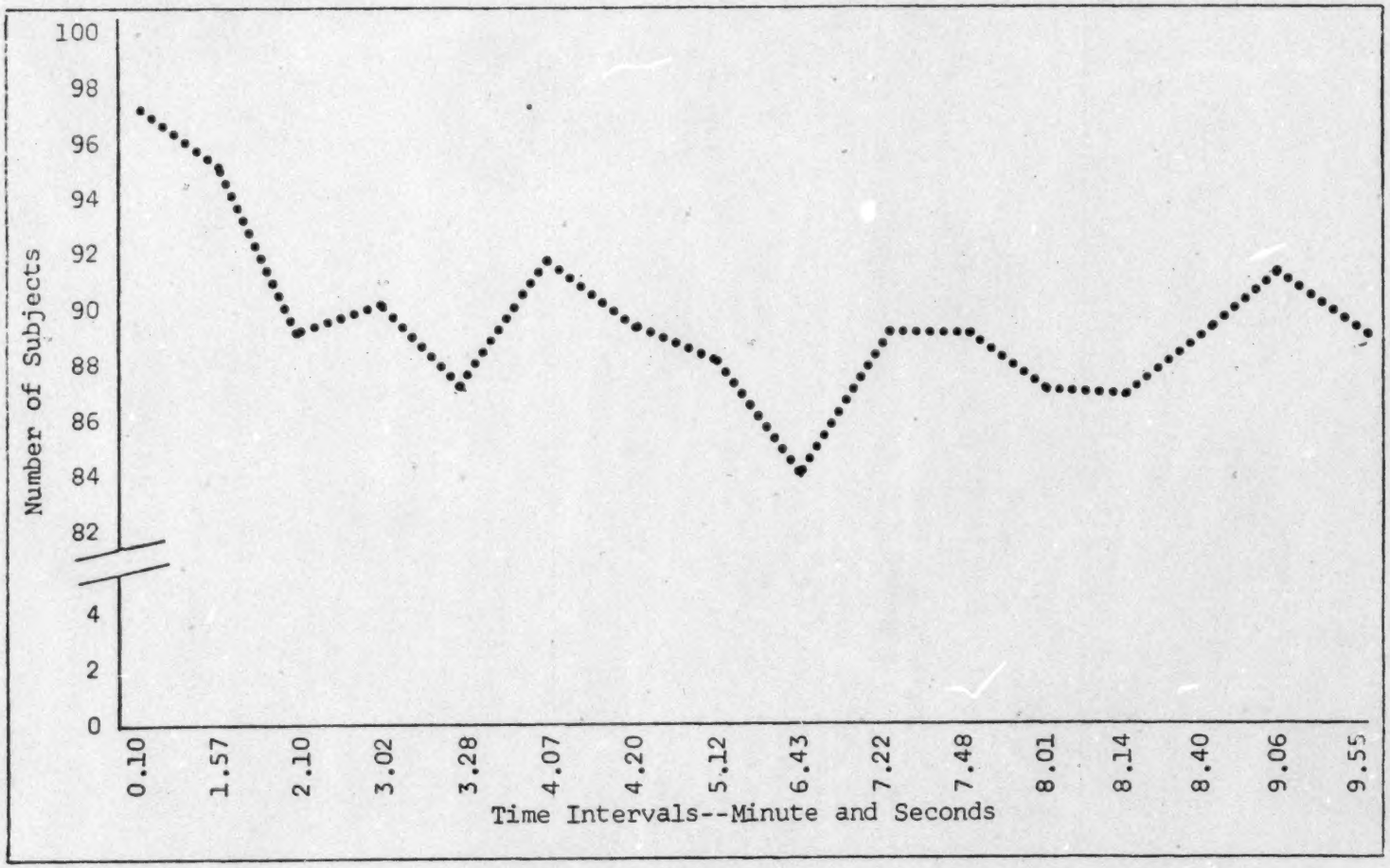

Figure 1. Number of Subjects Detecting Signal Word in Simple Attention Span Task (N=100)

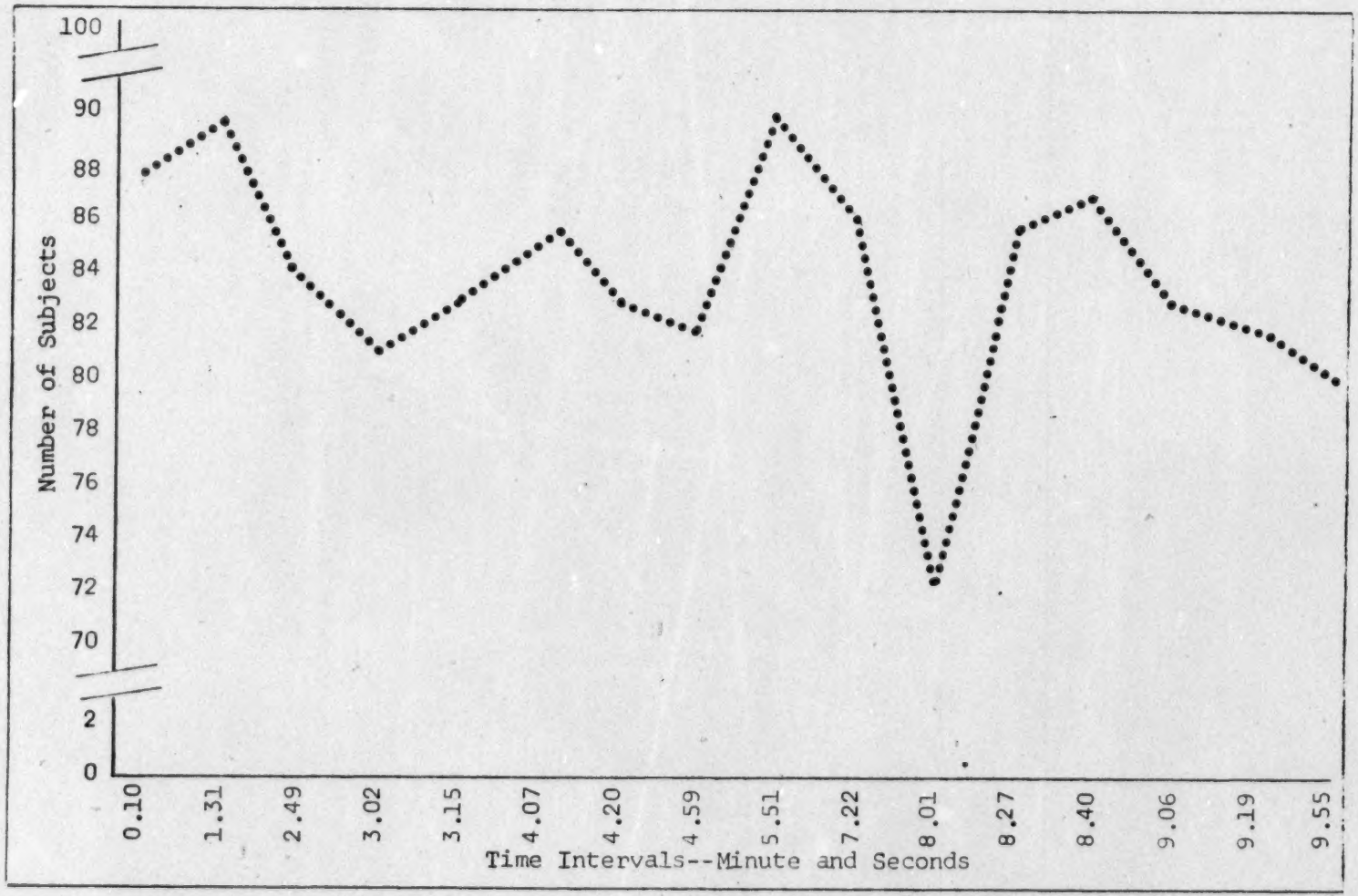

Figure 2. Number of Subjects Detecting Signal Word Series in Complex Attention Span Task (N=100)

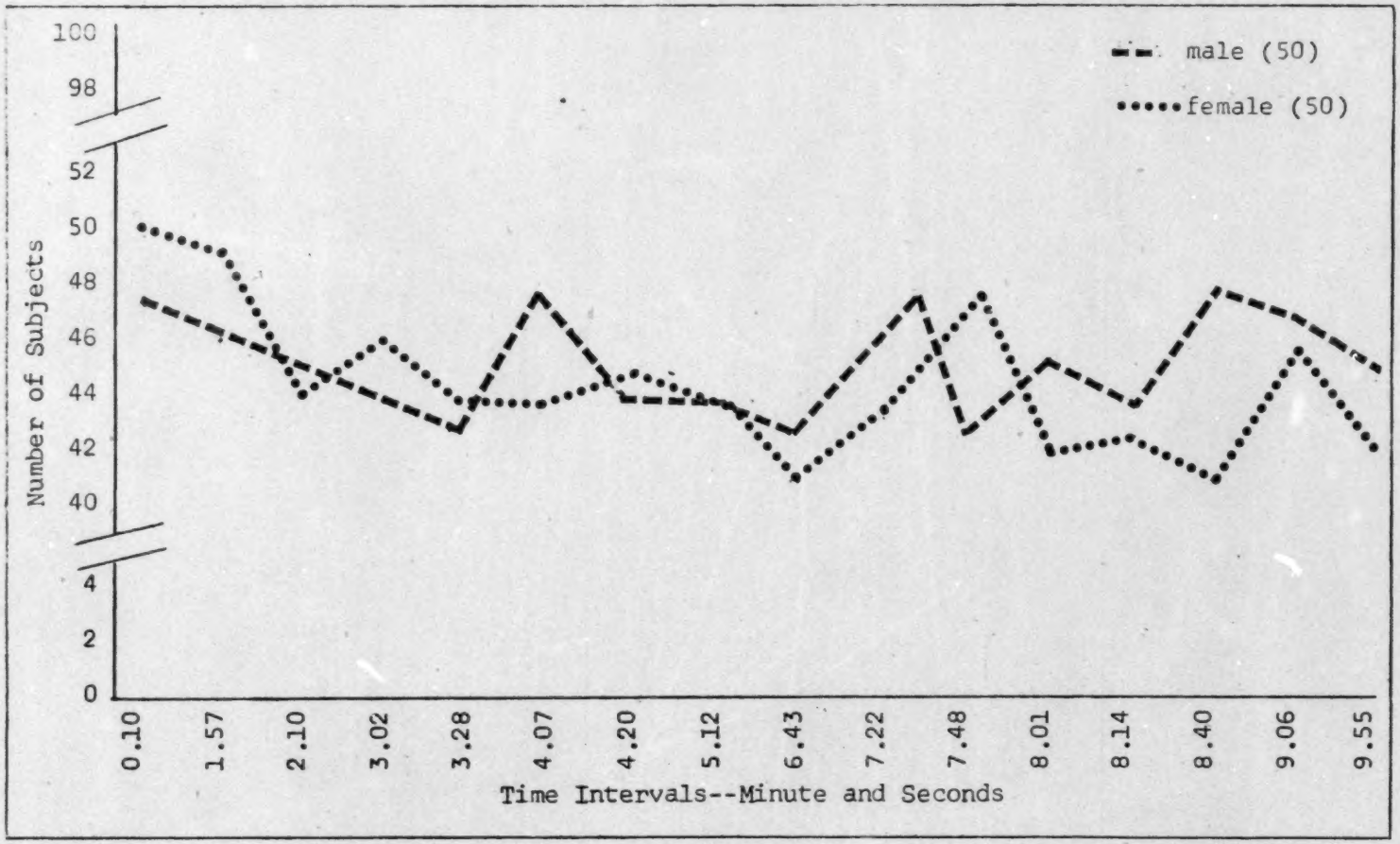

Figure 3. Number of Males and Females Detecting Signal Word in Simple Attention Span Task (N=100)

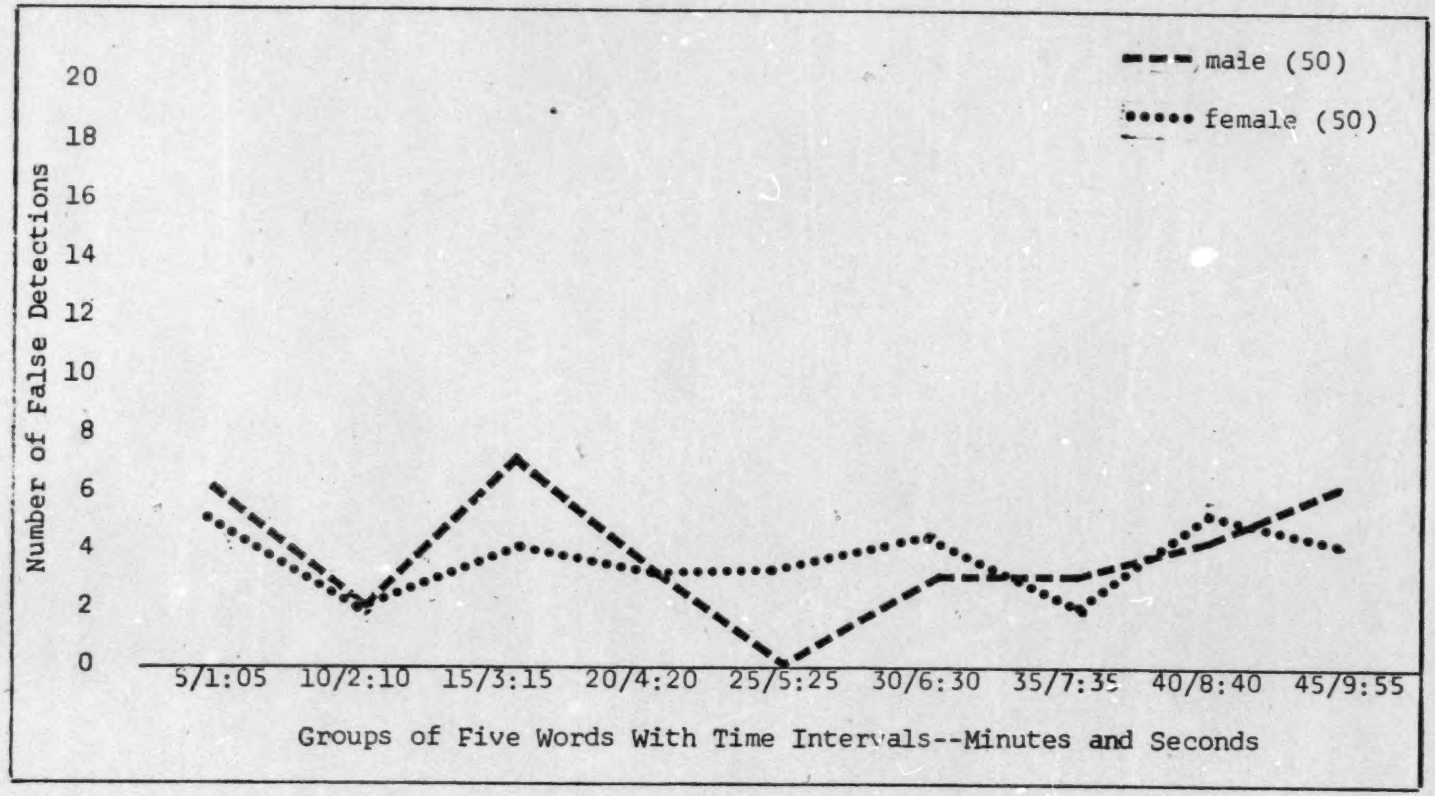

Figure 4. Number of Males and Females Making False Detections in Simple Attention Span Task (N=100)

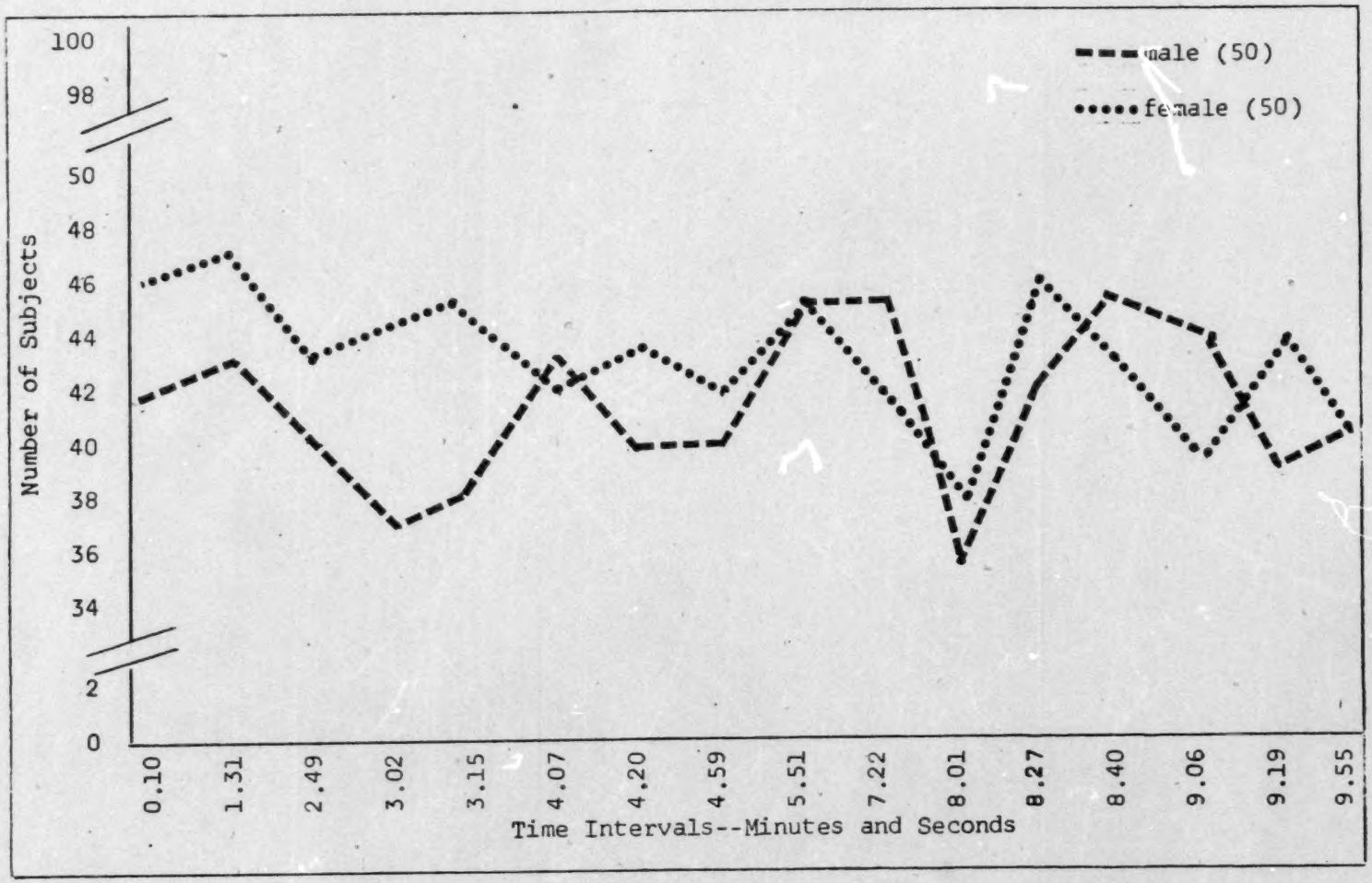

Figure 5. Number of Males and Females Detecting Signal Word Series in Complex Attention Span Task (N=100)

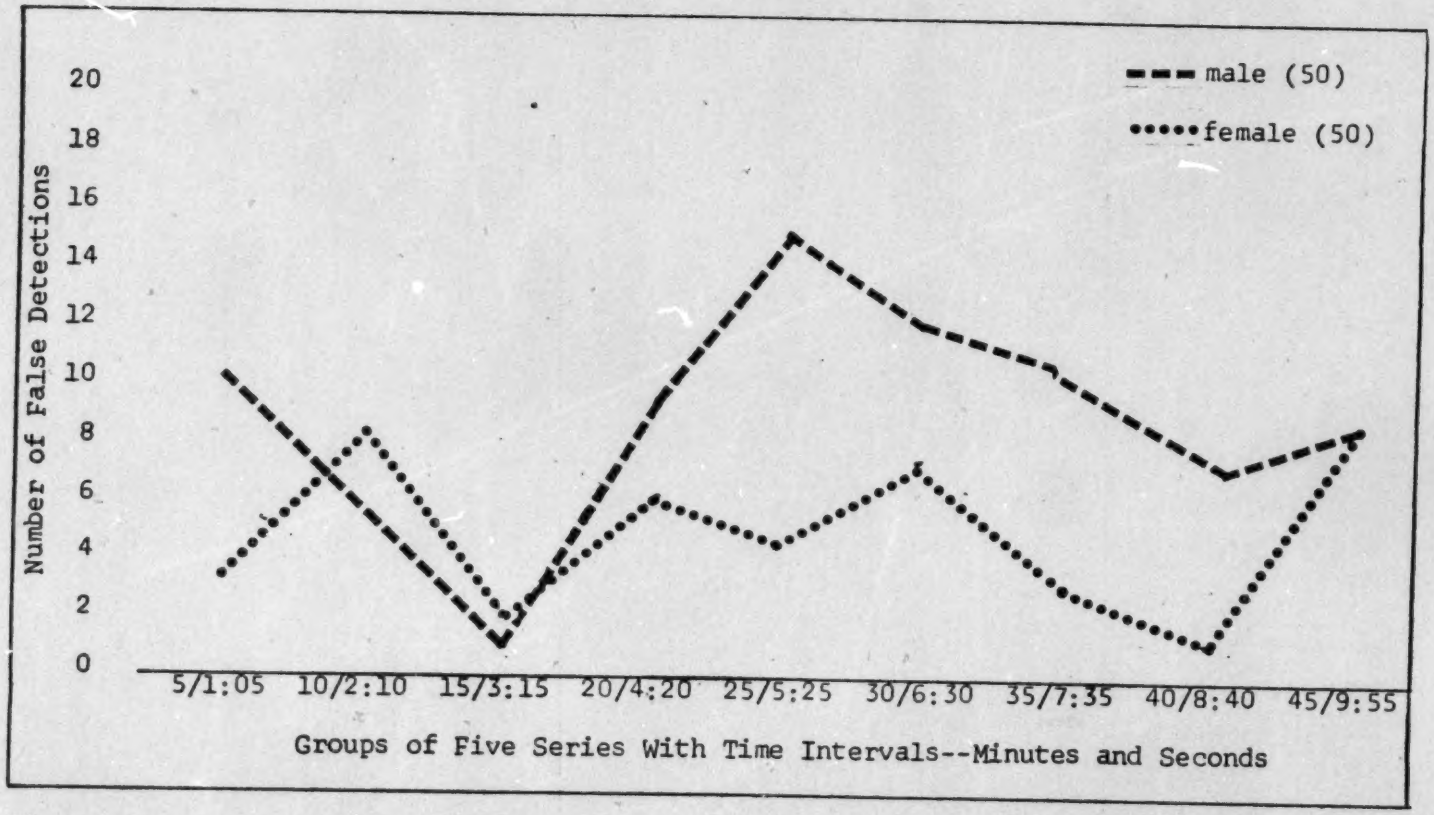

Figure 6. Number of Males and Females Making False Detections in Complex Attention Span Task (N=100)